CLAIMS

What is claimed is:

1. A probe for ablating tissue, comprising:

an outer elongate probe body including a distal ablative structure having an open architecture defining an interior space;

a lumen extending through the outer probe body, the lumen configured to slidably receive an inner elongate probe body, the lumen having an exit port out which the inner probe body can extend within the interior space; and

one or more ablative elements mounted to the distal ablative structure, wherein the one or more ablative elements are arranged to create a circumferential lesion.

2. The probe of claim 1, wherein the outer probe body is an intravascular catheter body.

3. The probe of claim 1, wherein the distal ablative structure is a loop structure.

4. The probe of claim 1, wherein the distal ablative structure is an open helical structure.

5. The probe of claim 4, wherein the open helical structure is tapered.

6. The probe of claim 1, wherein the distal end of the outer probe body is configured to be disposed within or around the ostium of a pulmonary vein, and the one or more ablative elements are configured to circumferentially contact tissue within or around the ostium of the pulmonary vein.

7. The probe of claim 1, wherein the exit port is proximal to the distal electrode structure.

8. A probe assembly for ablating tissue, comprising:

an outer probe including an elongate probe body having a distal ablative structure, a lumen having an exit port, and one or more ablative elements mounted to the distal ablative structure; and

an inner probe configured to be slidably disposed within the lumen of the outer probe, the inner probe including an elongate probe body having a distal diagnostic structure configured to extend out the exit port, and one or more diagnostic elements mounted to the distal diagnostic structure.

9. The probe assembly of claim 8, wherein the outer probe body is an intravascular catheter body.

10. The probe assembly of claim 8, wherein the distal ablative structure is a loop structure.

11. The probe assembly of claim 8, wherein the distal ablative structure is an open helical structure.

12. The probe assembly of claim 11, wherein the open helical structure is tapered.

13. The probe assembly of claim 8, wherein the distal ablative structure is an expandable balloon.

14. The probe assembly of claim 8, wherein the distal ablative structure is an open structure that forms an interior space, and the distal diagnostic structure is configured to extend within the interior space.

15. The probe assembly of claim 8, wherein the distal ablative structure is configured to be disposed within or around the ostium of a pulmonary vein, and the one or more ablative elements are configured to circumferentially contact tissue within or around the ostium of the pulmonary vein.

16. The probe assembly of claim 8, wherein the distal diagnostic structure comprises a single spline.

17. The probe assembly of claim 8, wherein the distal diagnostic structure is configured to assume a curvilinear shape.

18. The probe assembly of claim 8, wherein the one or more diagnostic elements comprises one or more electrophysiology mapping elements.

19. The probe assembly of claim 8, further comprising a guide sheath for housing the outer probe.

20. The probe assembly of claim 8, wherein the exit port is proximal to the distal ablative structure.

21. A medical probe, comprising:

an outer elongate probe body having a distal open helical structure;

a lumen extending through the outer probe body, the lumen configured to slidably receive an inner elongate probe body, the lumen having an exit port out which the inner probe body can extend along the helical structure; and

one or more operative elements mounted to the helical structure.

22. The probe of claim 21, wherein the outer probe body is an intravascular catheter body.

23. The probe of claim 21, wherein the helical structure is tapered.

24. The probe of claim 21, wherein the one or more operative elements comprises one or more ablative elements.

25. The probe of claim 21, wherein the helical structure is configured to be disposed within the ostium of a pulmonary vein, and the one or more operative elements are configured to circumferentially contact tissue within the ostium of the pulmonary vein.

26. The probe of claim 21, wherein the exit port is proximal to the helical structure.

27. A method of creating a circumferential lesion adjacent an anatomical vessel, comprising:

placing an ablation probe within or around an ostium of a vessel, the ablation probe comprising one or more ablative elements;

circumferentially arranging the one or more ablative elements within or around the vessel;

inserting a diagnostic probe through the ostium of the vessel, wherein the diagnostic probe is disposed within the vessel while the ablation probe is placed within or around the ostium of the vessel;

creating a circumferential lesion within or around the ostium of the vessel by energizing the one or more ablative elements; and

measuring diagnostic signals within the vessel with the diagnostic probe.

28. The method of claim 27, further comprising allowing fluid flow through the vessel while the circumferential lesion is created.

29. The method of claim 27, wherein the circumferential lesion is created without moving the ablative elements relative to the ostium of the vessel.

30. The method of claim 27, further comprising introducing the diagnostic probe through a lumen within the ablation probe into the vessel.

31. The method of claim 27, wherein the diagnostic signals are measured subsequent to the creation of the circumferential lesion.

32. The method of claim 31, wherein the diagnostic signals are also measured prior to the creation of the circumferential lesion.

33. The method of claim 27, wherein radio frequency energy is provided to the one or more ablative elements to create the circumferential lesion.

34. The method of claim 27, wherein the ablation probe is placed within or around the ostium of the vessel prior to insertion of the diagnostic probe within the vessel.

35. The method of claim 27, wherein the vessel is a pulmonary vein.

36. The method of claim 35, wherein the circumferential lesion is created to electrically isolate the pulmonary vein from a left atrium of a heart, and the diagnostic signals are electrophysiology signals.

37. A method of electrically isolating a pulmonary vein from the left atrium of a heart, the method comprising:

placing an ablation probe within or around an ostium of the pulmonary vein, the ablation probe comprising one or more ablative elements;

circumferentially arranging the one or more ablative elements within or around the ostium of the pulmonary vein;

inserting a mapping probe through the ostium of the pulmonary vein, wherein the diagnostic probe is disposed within the pulmonary vein while the ablation probe is placed within or around the ostium of the pulmonary vein;

creating a circumferential lesion within or around the ostium of the pulmonary vein by energizing the one or more ablative elements; and

measuring electrophysiology signals within the pulmonary vein with the mapping probe.

38. The method of claim 37, further comprising allowing blood to flow between the left atrium and the pulmonary vein while the circumferential lesion is created.

39. The method of claim 37, wherein the circumferential lesion is created without moving the ablative elements within the pulmonary vein.

40. The method of claim 37, further comprising introducing the ablation probe through a guide sheath into ostium of the pulmonary vein.

41. The method of claim 40, further comprising independently introducing the mapping probe through the guide sheath into the ostium of the pulmonary vein.

42. The method of claim 40, further comprising introducing the mapping probe through a lumen of the ablation probe into the left atrium of the heart.

43. The method of claim 37, wherein the electrophysiology signals are measured subsequent to the creation of the circumferential lesion.

44. The method of claim 43, wherein the electrophysiology signals are also measured prior to the creation of the circumferential lesion.

45. The method of claim 37, wherein radio frequency energy is provided to the one or more ablative elements to create the circumferential lesion.

46. The method of claim 37, wherein the ablation probe is placed in or around the ostium of the pulmonary vein prior to insertion of the mapping probe into the pulmonary vein.